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10/776,222	02/12/2004	Erol Girt	50103-528	3152

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,222

Applicant(s)

GIRT ET AL.

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/12/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Examiner's Comments

1. Regarding the limitation(s) "adhesion layer" in claims 18 and 19, the Examiner has given the term(s) the broadest reasonable interpretation(s) consistent with the written description in applicants' specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Donaldson Co., Inc.*, 16 F.3d 1190, 1192-95, 29 USPQ2d 1845, 1848-50 (Fed. Cir. 1994). See MPEP 2111. Specifically, the Examiner notes that "adhesion layer" is simply nomenclature and is not defined in the record. As such, any layer formed between the substrate and the soft magnetic layer would meet the limitation of "adhesion layer" for claims 18 and 19 (for claim 19, only provided it meets the further compositional limitations of the claim).

Election/Restrictions

2. Applicants' election with traverse of species I (claims 1 – 5 and 11 – 20) is acknowledged. Because applicants did not specifically point out the alleged errors in the restriction requirement, it is being treated as an election without traverse. Claims 6 – 10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected specie, there being no allowable generic or linking claim. The requirement is still deemed proper and is therefore made FINAL.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 150 words (37 CFR 1.72). See MPEP § 608.01(b).

The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. For completeness of the record, the Examiner notes that a double patenting rejection between this applications pending claims and the pending claims of co-pending application 10/765,208 has been made in Paragraph 6 of the Office Action mailed on February 23, 2006 in co-pending application 10/765,208.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 13, 14, 17, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lambeth et al. (WO 99/24973).

Regarding claim 1, Lambeth et al. disclose a perpendicular magnetic recording medium (*page 42, last paragraph*), comprising: a non-magnetic substrate (*Table II and page 51, lines 9 – 11: HF-Si(111)*) having a surface, and a layer stack formed over said substrate surface, said layer stack comprising, in overlying sequence from said

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substrate surface: a magnetically soft underlayer (*page 51, lines 9 – 11: “NiFe(111)”*); a non-magnetic interlayer structure (“Ag(111)/Ti(0002)”; and a magnetically hard perpendicular main recording layer (“CoCrPtTa(0002)”; wherein said non-magnetic interlayer structure is a structure comprising a layer of fcc Au-containing non-magnetic material having a <111> preferred growth orientation (*page 16, lines 7 – 20: where Au and Ag are both taught as suitable fcc materials*) and a layer of a different material in overlying or underlying contact with said layer of fcc Au-containing non-magnetic material (“Ti(0002”).

Regarding claims 13 and 14, Lambeth et al. disclose recording layers meeting applicants’ claimed limitations (*page 22, line 31 bridging page 23, line 10 and Table II*).

Regarding claims 17, 18 and 20, Lambeth et al. disclose substrates, “adhesion layers”, and protective layers/lubricants meeting applicants’ claimed limitations (*page 22, lines 24 – 30 and page 23, lines 11 – 35*).

8. Claims 1 – 5 and 11 – 20 are rejected under 35 U.S.C. 102(a) and/or 102(e) as being anticipated by Abarra et al. (U.S. Patent App. No. 2003/0186086 A1).

Regarding claim 1, Abarra et al. disclose a perpendicular magnetic recording medium (*Paragraph 0016*), comprising: a non-magnetic substrate (*Figure 13, element 51 and relevant disclosure thereto*) having a surface, and a layer stack formed over said substrate surface, said layer stack comprising, in overlying sequence from said substrate surface: a magnetically soft underlayer (*element 61*); a non-magnetic interlayer structure (elements 62/53/54/55); and a magnetically hard perpendicular main

recording layer(element 56 and relevant disclosure thereto); wherein said non-magnetic interlayer structure is a structure comprising a layer of *fcc* Au-containing non-magnetic material having a <111> preferred growth orientation (*Paragraphs 0070 – 0073 and 0077*) and a layer of a different material in overlying or underlying contact with said layer of *fcc* Au-containing non-magnetic material (*element 54*).

Regarding claims 2 and 3, Abarra et al. disclose thickness ranges meeting applicants' claimed limitations (*Paragraphs 0078 – 0080 and 0093*).

Regarding claims 4 and 5, Abarra et al. disclose materials and thickness values meeting applicants' claimed limitations (*Paragraphs 0077 and 0078*).

Regarding claims 11 and 12, Abarra et al. disclose soft magnetic layers meeting applicants' claimed limitations (*Paragraphs 0012 and 0089*).

Regarding claims 13 and 14, Abarra et al. disclose magnetic layers meeting applicants' claimed limitations (*Paragraph 0081*).

Regarding claims 15 and 16, Abarra et al. disclose using an amorphous layer meeting applicants' claimed material, thickness and intended use limitations (*Paragraphs 0089 – 0090*).

Regarding claims 17 – 19, Abarra et al. disclose substrates and "adhesion layers" meeting applicants' claimed material limitations (*Paragraphs 0071, 0087 and 0088*).

Regarding claim 20, Abarra et al. disclose overcoats and lubricant layers meeting applicants' structural limitations (*Figure 13, elements 57 and 58, and relevant disclosure thereto*).

9. Claims 1 – 5, 11 – 13, 17 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamamoto et al. (U.S. Patent App. No. 2004/0043258 A1).

Regarding claim 1, Yamamoto et al. disclose a perpendicular magnetic recording medium (*Paragraph 0001*), comprising: a non-magnetic substrate (*Figure 1, element 10 and relevant disclosure thereto*) having a surface, and a layer stack formed over said substrate surface, said layer stack comprising, in overlying sequence from said substrate surface: a magnetically soft underlayer (*element 11*); a non-magnetic interlayer structure (elements 12 and 13); and a magnetically hard perpendicular main recording layer (element 14 and relevant disclosure thereto); wherein said non-magnetic interlayer structure is a structure comprising a layer of *fcc* Au-containing non-magnetic material having a <111> preferred growth orientation (*Paragraphs 0014 and 0015*) and a layer of a different material in overlying or underlying contact with said layer of *fcc* Au-containing non-magnetic material (*element 13*).

Regarding claims 2 and 3, Yamamoto et al. disclose thickness ranges meeting applicants' claimed limitations (*Paragraph 0026*).

Regarding claims 4 and 5, Yamamoto et al. disclose materials and thickness values meeting applicants' claimed limitations (*Paragraphs 0014 – 0021 and examples – where the Examiner notes that while Yamamoto et al. explicitly disclose Cu-X alloys, they also teach that Cu and Au are both suitable fcc materials to use for the layer*).

Regarding claims 11 and 12, Yamamoto et al. disclose soft magnetic layers meeting applicants' claimed limitations (*Paragraphs 0040*).

Regarding claim 13, Yamamoto et al. disclose magnetic layers meeting applicants' claimed limitations (*Paragraph 0040*).

Regarding claims 17 and 20, Yamamoto et al. disclose substrates, overcoats and lubricant layers meeting applicants' structural limitations (*Paragraph 0040*).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1 – 5 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abarra et al. as applied above.

Abarra et al. is relied upon as described above.

While the Examiner deems that Abarra et al. disclose the claimed invention with sufficient specificity to anticipate the claimed limitations, the Examiner acknowledges that Abarra et al. fail to explicitly disclose selecting Au or Au-X from the list of *fcc* materials.

However, Abarra et al. teach that alloying the Al₃Ti element with Au (among other equivalent materials) "provide a more uniform lattice for the magnetic layer **56** to grow on or for the adhesive layer **54** to grow on" (*Paragraph 0077*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicants' invention to modify the device of Abarra et al. to utilize a material

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meeting applicants' claimed compositional limitations as taught by Abarra et al., since such a choice can "provide a more uniform lattice for the magnetic layer **56** to grow on or for the adhesive layer **54** to grow on" and substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Au and Cu, Ag, Pt, Pd, etc. are equivalents in the field of elements capable of being alloyed with Al_3Ti and still result in a *fcc* <111> crystal orientation. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

12. Claims 1 – 5 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abarra et al. as applied above in either Paragraph 8 or Paragraph 11, and further in view of Yamamoto et al. ('258 A1).

Abarra et al. is relied upon as described above.

While the Examiner deems that Abarra et al. disclose the claimed invention with sufficient specificity to anticipate the claimed limitations, the Examiner acknowledges that Abarra et al. fail to explicitly disclose selecting Au or Au-X from the list of *fcc* materials.

However, Yamamoto et al. teach that selection of an alloy of Au with elements meeting applicants' claimed limitations can be selected for both lattice size matching and chemical stability (*Paragraphs 0019 – 0021*). While Yamamoto et al. only illustrate the situation with a Cu-X alloy, Yamamoto et al. teach the equivalents of Cu to Au as suitable *fcc* based materials (*Paragraph 0019*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicants' invention to modify the device of Abarra et al. to utilize a material meeting applicants' claimed compositional limitations as taught by Yamamoto et al., since such a choice can result in improved lattice matching and improved chemical stability and substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, Au and Al, Cu, Rh, Pd, Ag and Ir are equivalents in the field of elements capable of being alloyed with additional elements and still result in a *fcc* <111> crystal orientation.

13. Claims 14 – 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. ('258 A1) as applied above in Paragraph 9, and further in view of Abarra et al. ('086 A1).

Yamamoto et al. is relied upon as described above.

Regarding claims 14 – 16, 18 and 19, Yamamoto et al. fail to disclose the specifics of the claimed recording media.

However, Abarra et al. teach that the magnetic layer thickness (claim 14) can be varied to effect the magnetic properties in a perpendicular recording medium (*Paragraph 0081*). Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to utilize a thickness value meeting applicants' claimed limitations by optimizing the results effective variable through routine experimentation. *In re Boesch*, 205 USPQ 215 (CCPA 1980); *In re Geisler*, 116 F. 3d

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1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 15 and 16, Abarra et al. teach providing an amorphous layer meeting applicants' claimed limitations between the soft magnetic layer and the non-magnetic interlayer structure in order to promote small grain sizes in the interlayer structure (*Paragraphs 0089 – 0090*).

Regarding claims 18 and 19, Abarra et al. teach providing an "adhesion layer" meeting applicants' claimed limitations to improve the adhesion of layers to the substrate surface (*Paragraphs 0087 – 0088*).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura et al. (U.S. Patent App. No. 2004/0027868 A1) is 102(e) art on claims 1 – 5, 13, 17, 18 and 20, but no rejection has been made since the above applied art is deemed the closest prior art and any arguments and/or amendments sufficient to overcome the applied art would reasonably be expected to overcome a rejection predicated on the Nakamura et al. reference.


15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
June 20, 2006


Kevin M. Bernatz, PhD
Primary Examiner